

Two new species of the genus *Loboschiza* Diakonoff, 1968 (Lepidoptera: Tortricidae: Olethreutinae) from Thailand

NANTASAK PINKAEW^{1,2,3} & NETNAPA PHOSRITHONG¹

¹Department of Entomology, Faculty of Agriculture at Kamphaeng Saen, Kasetsart, University, Nakhon Pathom, 73140, Thailand.
E-mail: netnapapho@hotmail.com

²Center for Advanced Studies in Tropical Natural Resources, NRU-KU, Kasetsart University, Chatuchak, Bangkok, 10900, Thailand.
E-mail: agrnsnp@ku.ac.th

³Corresponding author

Abstract

Two new species of *Loboschiza* Diakonoff, 1968 are described and illustrated from Thailand: *L. bispina* Phosrithong and Pinkaew, **n.sp.**, *L. rectanguluma* Phosrithong and Pinkaew, **n.sp.** The two new species brings to 20 the number of described species in the genus, which is distributed from India to Australia.

Key words: new species, taxonomy, Enarmoniini, Thailand

Introduction

The genus *Loboschiza* was proposed by Diakonoff (1968) for the single species *Argyroploce clytocarpa* Meyrick, 1920 from the Philippine Islands. The genus can be distinguished superficially by a conspicuously two-toned forewing pattern with the basal one-half to two-thirds either bright yellow, orange, or with bright red bands on a brownish ground; and the distal portion darker, brownish or blackish, often with bright sinuous striations (Horak 2006). Brown (2005) listed three species worldwide, and Horak (2006) transferred 11 additional species to the genus. Anan et al. (2016) described four new species from Thailand, i.e., *L. spiniforma*, *L. bisulca*, *L. subrectangula* and *L. lunata*; and Heppner & Bae (2016) added two species from Cambodia and Vietnam: *L. cambodiensis* and *L. flavobasis*. The genus currently is known from India to Australia.

To date, we have documented five species of *Loboschiza* from Thailand, including the widespread *L. koenigiana*. In this study, we describe two new species from Thailand based on material collected in Khao Yai National Park and Pang Sida National Park. The two new species brings to 20 the number of described species in the genus.

Materials and methods

The specimens examined are deposited in the Kasetsart Kamphaeng Saen Insect Collection (KKIC). Adults were photographed using a Cannon DSLR 5D mark II and a 100 mm macro lens. Labial palpi were photographed through a Leica S8 APO stereomicroscope equipped with a Leica MC170 HD camera module. Genitalia were dissected following the method described by Common (1990). Genitalia were photographed with an ICC50 HD camera module attached to a Leica DM750 microscope.

Results

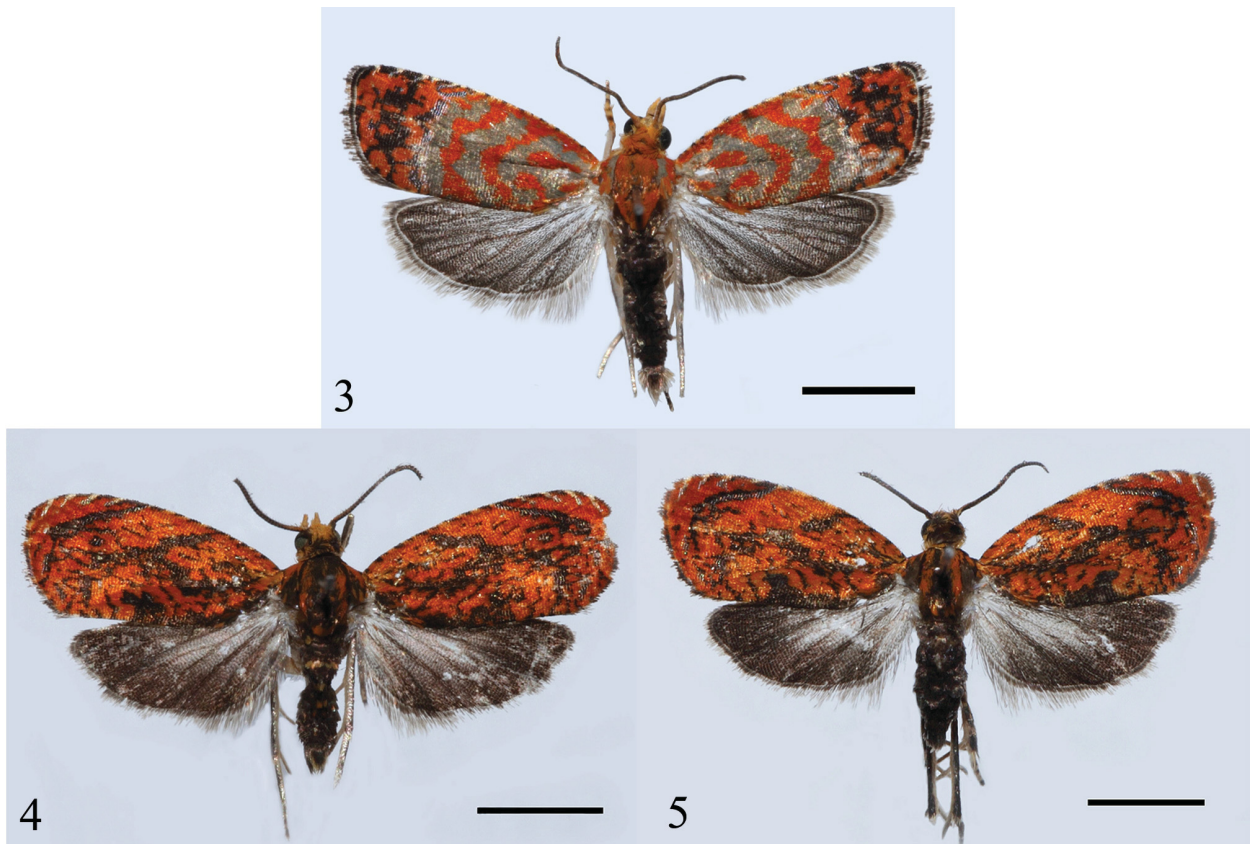
Loboschiza bispina Phosrithong and Pinkaew, n.sp.

(Figs. 1, 3, 6, 8)

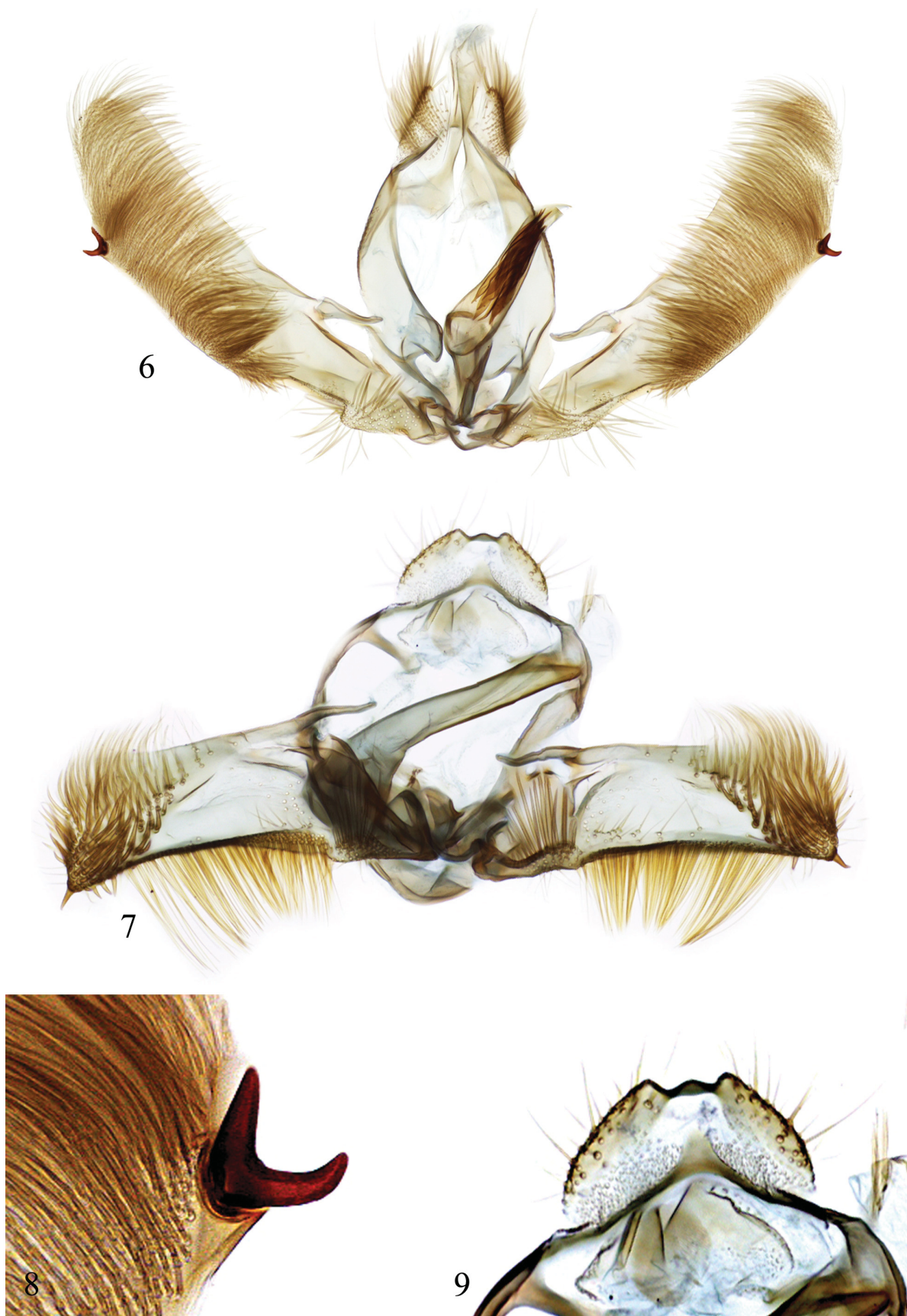
Diagnosis. *Loboschiza bispina* has a distinctive forewing pattern with basal portion bearing two curved transverse bands on a gray ground color. The male genitalia are very similar to those of *L. spiniforma*, but the tegumen lacks spiniform setae in *L. bispina*. In *L. spiniforma* the cucullus is longer and more concave basoventrally and has a short, pointed spine; in *L. bispina* the spine is larger with a bifid apex.



FIGURES 1–2. Head of *Loboschiza*. 1. *L. bispina* (holotype male). 2. *L. rectanguluma* (holotype male).



FIGURES 3–5. Adults of *Loboschiza*. (scale bars = 2 mm). 3. *L. bispina* (holotype male). 4. *L. rectanguluma* (holotype male). 5. *L. rectanguluma* (paratype female).



FIGURES 6–9. Male genitalia of *Loboschiza*. **6.** *L. bispina* (holotype male). **7.** *L. rectanguluma* (holotype male). **8.** Bifid spine on right cucullus of *L. bispina* (holotype male). **9.** Combined socii of *L. rectanguluma* (holotype male).

Description. Head: Upper frons pale orange, lower frons yellowish orange, vertex orange; labial palpus porrect (Fig. 1), first segment orange-white, second segment strongly expanded distally, yellowish orange, slightly darker orange distally, with small blackish patch dorsomedially, third segment short, yellowish orange. Antenna short, not reaching middle of forewing costa, dark brown, with narrow, longitudinal stripe of yellowish orange scales dorsobasally. Thorax: Pronotal collar orange, tegulae with two longitudinal bands, outer band orange and inner band gray, mesonotum brown surrounding by orange. Forewing (Fig. 3) subtriangular, length 6.0–6.5 mm in male (n = 13), termen oblique, costal margin evenly curved with well-developed, small blackish striae; two-toned wing pattern with basal 2/3 gray ground color, with irregular dark orange band along costal margin, extending from wing base to middle of costa and connected to two distinct dark orange, transverse bands, curved outward, extending from costa to dorsum, basal with small, elliptical mark and irregular band extending from wing base, curved downward to dorsum, dark orange, distal portion blackish with small orange sinuous lines. Underside grayish brown, with white spots alternating with ground color along costa. Hindwing brown, slightly paler toward base, underside light brown. Abdomen: Male genitalia (Fig. 6) with tegumen rather wide, moderately sclerotized, with prominent subtriangular apodemes for muscle (M4) attachment, laterally with dense scales sockets; uncus absent; socii rather large, with subtriangular lobe projecting upward, densely setose; gnathos with two weakly sclerotized arms arising from apical 1/3 of tegumen; vinculum moderately sclerotized; juxta subtriangular; caulis rather short; phallus slightly sinuate, moderately long, widest at base, slightly narrowing to apex, vesica with dense patch of cornuti; valva simple, long, subcylindrical; sacculus long, 1/3 length of valva, with dense patch of setae basally; cucullus 2 times length of sacculus, densely setose, ventromedially, with distinct strong spine with bifid apex (Fig. 8). Female unknown.

Holotype. ♂, Thailand, Nakhon Ratchasima Prov., Khao Yai N. P., 14°25'55"N, 101°24'05"E, ca. 700 m, 18–20 Aug 2017, N. Pinkaew, np 10615, ♂ genitalia slide NP 3491.

Paratypes. 12♂, Thailand, Nakhon Ratchasima Prov., Khao Yai N. P., 14°25'55"N, 101°24'05"E, ca. 700 m, 10 Mar 2016, N. Pinkaew, np 8622, ♂ genitalia slide NP 3220, 28–30 Jun 2017, N. Pinkaew, np 10537, ♂ genitalia slide NP 3259, np 10538, ♂ genitalia slide NP 3260, np 10539, ♂ genitalia slide NP 3261, 24–25 July 2017, N. Pinkaew, np 10581, ♂ genitalia slide NP 3480, np 10583, ♂ genitalia slide NP 3492, np 10586, ♂ genitalia slide NP 3481, np 10587, ♂ genitalia slide NP 3494, np 10582, np 10584, np 10585, 18–20 Aug 2017, N. Pinkaew, np 10614, ♂ genitalia slide NP 3493.

Etymology. The specific epithet *bispina* refers to the bifid spine of the cucullus.

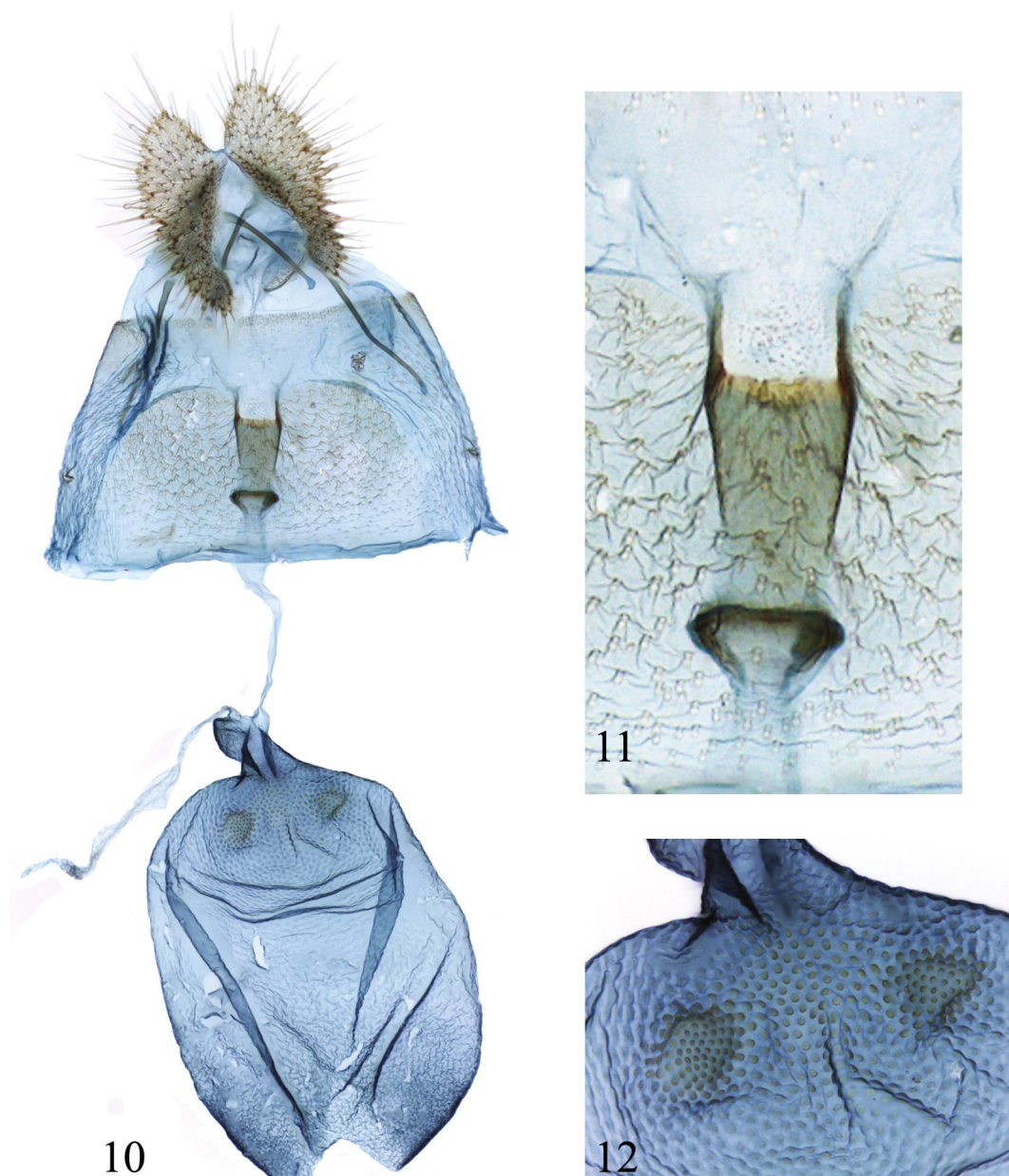
Distribution. Northeast Thailand

***Loboschiza rectanguluma* Phosrithong and Pinkaew, n.sp.**

(Figs. 2, 4–5, 7, 9, 10–12)

Diagnosis. The forewing pattern of *L. rectanguluma* is most similar to that of *L. delomilta*, but the hindwing of *L. delomilta* has a yellow patch, which is white in *L. rectanguluma*. The male genitalia of *L. rectanguluma* are similar to those of *L. furiosa*, but the socii form a round lobe with an apical-medial concavity in *L. rectanguluma*, whereas the concavity is absent in *L. furiosa*. The cucullus of *L. rectanguluma* has a patch of long setae along the ventral margin that is longer than that of *L. furiosa*. The female genitalia are similar to those of *L. furiosa* but differ in the shape of colliculum and the shape of the secondary sac at the entrance of the corpus bursa, which is smaller in *L. rectanguluma*.

Description. Head: Upper frons orange, lower frons yellowish orange, vertex blackish mixed with orange; labial palpus porrect (Fig. 2), first segment yellowish white, second segment slightly broadened to apex, yellowish white, with small blackish patch dorsomedially, third segment short, yellowish white. Antenna short, dark brown, not reaching middle of forewing costa, dorsobasally with narrow, orange longitudinal stripe. Thorax: Pronotal collar dark brown mixed with orange, tegulae orange in basal 2/3, brown in apical 1/3, mesonotum dark brown with orange band laterally and at posterior end. Forewing length 3.0–4.5 mm in male (n = 2) (Fig. 4), 3.0 mm in female (n = 1) (Fig. 5); costa evenly curved, rounded at apex, costa with blackish strigulae, apical 1/3 with four distinct, short, oblique, silvery striae; termen obliquely rounded; ground color orange with short, diffuse, narrow, longitudinal and transverse blackish lines, dorsum with subtriangular, blackish patch medially, with two transverse, narrow blackish bands: first extending obliquely from basal 1/3 of costa to middle of wing then separated by first branch extending inward to dorsum near wing base, the other extending outward to near tornus, second band



FIGURES 10–12. Female genitalia of *Loboschiza*. **10.** *L. rectanguluma* (paratype female). **11.** Ostium bursae and colliculum. **12.** Signa.

extending obliquely from apical 1/3 of costa to between to CuA1; underside grayish brown with pale yellow along costa and termen. Hindwing dark brown with indistinct whitish patch medially; underside grayish brown with grayish white patch medially. Abdomen: Male genitalia (Fig. 7) with tegumen ovate, moderately sclerotized; uncus reduced; socii (Fig. 9) medially subsemicircular, with shallow excavation, sinuate dorsomedially, with moderately dense setae laterally, anterior surface with dense scale sockets in ventral half; gnathos with moderately sclerotized arms arising from apical 1/3 of tegumen; vinculum moderately sclerotized; juxta subtriangular; caulis short; anellus surrounding basal 1/4 of phallus; phallus long, basal 1/3 slightly curved and widened, remainder cylindrical, rather straight, with oblique apex; valva subrectangular, rather short; sacculus short, with dense patch of setae basally; cucullus long, about 2.5 times length of sacculus, with sparse setae ventrobasally extending to middle of cucullus ventromedially, dorsoapical corner round, ventroapical corner acutely pointed with single, short spine, dense patch of long setae along ventral margin extending from base to near ventroapical corner, apical half of cucullus with dense bristles. Female genitalia (Fig. 10) with papillae anales wide, densely covered with setae; tergum VIII smooth, with moderately dense scale sockets on subtriangular lateral extension; sternum VII with large, moderately

sclerotized plate, with dense undulate patch of scale sockets, posterior margin with U-shape emargination medially; sterigma absent, ostium bursae (Fig. 11) simple, fused with emargination of sternum VII, antrum forming sclerotized cup 1/4 length of ductus bursae, followed by incomplete subtriangular ring; ductus bursae moderately long, ductus seminalis originating from small sac at entrance of ductus bursae; corpus bursae ovate with two round, scobinate patches near bursae neck (Fig. 12).

Holotype. ♂, Thailand, Sa Kaeo Prov., Pang Sida N. P., 13°59'36"N, 102°12'21"E, ca. 165 m, 19 Oct 2017, N. Pinkaew, np 11193, ♂ genitalia slide NP 3490.

Paratypes. 1♂, 1♀, Thailand, Sa Kaeo Prov., Pang Sida N. P., 14°02'25"N, 102°15'56"E; ca. 310 m, 23 Aug 2017, N. Pinkaew, np 10758, ♂ genitalia slide NP 3330, 18 Oct 2017, N. Pinkaew, np 11100, ♀ genitalia slide NP 3489.

Etymology. The specific epithet *rectanguluma* refers to the rectangular shape of the valva.

Distribution. Eastern Thailand.

Acknowledgements

This research was supported by the Kasetsart University Research and Development Institute and the Higher Education Research Promotion and National Research University Project of Thailand, Office of the Higher Education Commission. We thank the Department of National Parks, Wildlife and Plant Conservation for permission to collect in Khao Yai National Park and Pang Sida National Park. We also express our sincere thanks to Marianne Horak for comments, suggestions, and comparative specimens, and two anonymous reviewers for detailed comments and suggestions.

References

- Anan, S., Dokchan, P. & Pinkaew, N. (2016) *Loboschiza* Diakonoff (Lepidoptera: Tortricidae) from Thailand with descriptions of four new species. *Zootaxa*, 4109 (1), 81–88.
<https://doi.org/10.11646/zootaxa.4109.1.7>
- Brown, J.W. (2005) *World catalogue of insects. Vol. 5. Tortricidae (Lepidoptera)*. Apollo Books, Stenstrup, 714 pp.
- Common, I.F.B. (1990) *Moths of Australia*. Melbourne University Press, Melbourne, 535 pp.
- Diakonoff, A. (1968) Microlepidoptera of the Philippine Island. *U.S. National Museum Bulletin*, 257, 1–484.
<https://doi.org/10.5479/si.03629236.257.1>
- Heppner, J.B. & Bae, Y.S. (2016) Two new species of *Loboschiza* from Cambodia and Vietnam (Lepidoptera: Tortricidae: Olethreutinae: Enarmoniini). *Zootaxa*, 4169 (1), 171–178.
<https://doi.org/10.11646/zootaxa.4169.1.9>
- Horak, M. (2006) *Monograph on Australia Lepidoptera. Vol. 10. Olethreutine Moths of Australia (Lepidoptera: Tortricidae)*. CSIRO Publishing, Collingwood, Victoria, 522 pp.